Work Order ID 62743

Thursday, October 07, 2010 1:26:13 PM



Page

Insp.

Stamp

Item ID: D206-667-103 Accept Setup Start Revision ID: Stop Item Name: Crosstube Fwd Start/Date: 10/7/2010 Start Oty: 1.00 **Cust Item ID:** Required Date: 10/27/2010 Req'd Qty: 1.00 **Customer:** Reference: Run Start Date: 10-10-0 Approvals: Tooling: **Process Plan:** Date: Stop QC: Date: SPC (Y/N): Date: Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Accept Reject Reject Work Center ID **Description** Code **Qty** Run Hours **Qty** Number Draw Nbr **Revision Nbr** D206-667-143 Rev C 0.00 DOCUMENT CONTROL Memo Photocopy bluefile and create labels as per PPP D206-667-103 CHG004 CHG004 Document Control 0.00 110 Pick Kit Packaging Packaging 0.00 Memo Packaging

120

CNC Bend 2

CNC Bend 2
CNC Alpha 160 Bender

Memo

BENDING MACHINE - CROSSTUBES

, ,

Bend tube as per Dwg D206-667-143 using CNC bender program

0.00

0.00

B 10-10-26.



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W/O:		WORK ORDER CHANGES	WORK ORDER CHANGES										
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	Resolution:		Disposition:	QA: N/C Closed:	Date:

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Work Order ID 62743 Thursday, October 07, 2010 1:26:13 PM			_									Page 2
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130 	QC	C15- Crosstube Dimen Memo	sional Check	0.00	110/26			(1))			

Memo

Quality Control

W/O:		WORK ORDER CHANGES											
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Work Order ID 62743

Thursday, October 07, 2010 1:26:13 PM



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Item ID:

D206-667-103

Accept



Setup Start

Stop



Revision ID:

Item Name:

Crosstube Fwd

Start Date: 10/7/2010

Start Oty: 1.00

Required Date: 10/27/2010 Req'd Qty: 1.00



Date:

Cust Item ID: Customer:

Reference:

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Process Plan:

Date:

Tooling: SPC (Y/N): Date:

Tool ID

Date:

Tool # Plan

Code

Run

Start



Reject

Stop

Reject

Qty



Number Stamp

Insp.

Sequence ID/ **Work Center ID**

140



Crosstubes

Crosstubes

Operation Description

Set Up/ **Run Hours**

0.00

Crosstubes

Memo

0.00

1-Drill holes & ream using drill Jig DT8541 & DT8542 as per Dwg D206-667-143. Drill all (3) top holes.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8541 & DT8542 as per Dwg D206-667-143. Drill only the top (2) holes.

5-Drill pilot holes as per Dwg D206-667-143. Drill only the top (2) holes.

6-Drill Fwd rivet holes using drill Jig DT8787FWD as per Dwg D206-667-143. Note: Fwd side has 3x top holes.

7-Drill Aft rivet holes using drill Jig DT8787AFT as per Dwg D206-667-141.

8-C'sink holes as per Dwg D206-667-143. Allow rivet to sit below surface to compensate for paint.

9 -Scribe part # and batch # using vibrating stylus as per Dwg D206-667-143 Inside of Cuff(Donot engrave on outside of tube)

10-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-143

Accept

Qty

10-1026

Dart Aerospace	Ltd
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W/O:		WORK ORDER CHANGES											
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Revision ID:							
Item Name:	Crosstube Fwd						
Start Date:	10/7/2010	Start Qty:	1.00				
Required Date:	10/27/2010	Req'd Qty:	1.00				

Process Plan:

Operation

Description

Crosstubes Chemical Conversion

Memo

QC3- Inspect Part Finish

Memo

Memo

QC5- Inspect part completeness to step on W/O

Date:

Date:

Reference:

Approvals:

Sequence ID/

HandFXtube

Quality Control

Quality Control

150

160

170

QC

Work Center ID

Hand Finishing Crosstubes

Accept

Tooling:

0.00

0.00

0.00

SPC (Y/N):

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	Cust Item II Customer:) :							
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Work Order ID 62743

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Item ID:

D206-667-103

Accept

Setup Start

Revision ID:

Item Name:

Crosstube Fwd

Start Date:

10/7/2010

Start Qty: 1.00

Required Date: 10/27/2010

Reg'd Oty: 1.00



Cust Item ID:

Customer:

Reference:

Approvals:

Process Plan:

Operation

Description

QC: Date:

Date: Tooling:

SPC (Y/N):

0.00

0.00

Date:

Date:

Run

Start Stop

Stop



Set Up/

Run Hours

Tool ID

Tool # Plan Code

Accept Qty

Reject **Qty**

Reject

Insp. Number Stamp

Sequence ID/ Work Center ID

180

Outsource2

Outsource process - NDT

Memo

CROSSTUBES

Outsource process - NDT per QSI038 4.1

CZ 10/10/28 ()

190

Packaging

Packaging

Packaging

0.00

0.00

Memo Ensure copy of NDT results attached to work order.

200

QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

M 10 10 29 (1)

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W/O:			W	ORK ORDER CH	ANGES		<u> </u>			
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Work Order ID 62743

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Item ID:

D206-667-103

Accept

Setup Start



Revision ID:

Item Name:

Crosstube Fwd

Start Date: 10/7/2010 **Required Date:** 10/27/2010

Start Oty: 1.00

Reg'd Qty: 1.00



Cust Item ID:

Customer:

Tool ID

Reference:

Approvals:

Process Plan: Date:

QC: Date: SPC (Y/N):

Date:

Date:

Tool # Plan

Code

Run

Accept

Qty

Start

Stop



Stop

Reject

Qty

Number Stamp

Insp.

Reject

__10__10__19

Sequence ID/ **Work Center ID**

210

SprayPaint **Spray Painting**

Operation Description

SprayPaint

Set Up/ **Run Hours**

0.00

Tooling:

Memo

0.00

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:

Start Time: 7'00 Fininsh Time: Q:00

PAINT:

Start Time: 12:00 Finish Time: \:00

220

QC

Quality Control

QC14- Inspect Spray Paint

0.00

Memo

0.00

Wrap in plastic bag to protect from scratches

3-10-12-01 (

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Work Orde Thursday, Octob												Page 7
Item ID: Revision ID:	D206-667-10	03		Accept					Setup			
Item Name:	Crosstube Fwo	d								Stop		
Start Date: Required Date:	10/7/2010 10/27/2010	Start Qty: 1.00 Req'd Qty: 1.00			Cust Item I Customer:	D:						
Reference:							_		_	C 4 4	1 18011(8) 8	8 310 181 1181 1881
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Sequence ID/ Work Center II)	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accep Qty	t Rej Qty		Reject Number	Insp. Stamp
230 Crosstubes		Crosstubes		0.00	·					10	11	01(1)
Crosstubes		l-Install sup 015. Let cur holes should A/R Magnol	DE AS PER DWG D206-66 oport using 0.03" to 0.06" the for 12h after installation of the facing up. Should be bound 6398:	nick layer of magnobond and prior to packaging.	Note: (2) Aft que clamps to 80-	m) 10.	u.a.)					

240

QC5- Inspect part completeness to step on W/O

3-Install nut plates as per Dwg D206-667-143. Touch-up rivet heads with Imron

s/11/00 8 00.0

Quality Control

Memo

paint.

W/O:			V	VORK ORDER CHANG	ES				
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Work Order ID 62743

Thursday, October 07, 2010 1:26:13 PM



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· Item ID:

D206-667-103

Accept



Setup Start

Stop



Revision ID:

Start Date:

Item Name:

Crosstube Fwd

10/7/2010

Start Qty: 1.00

Req'd Qty: 1.00 **Required Date: 10/27/2010**

Cust Item ID:

Customer:

Reference:

Approvals:

QC:

Process Plan:

Operation

Pick Kit

Description

Date:

Date:

Tooling: SPC (Y/N):

Set Up/

Run Hours

Date:

Date:

Run

Start Stop



Sequence ID/

Work Center ID

250

Packaging

Memo

0.00

0.00

Tool ID

Tool # Plan Code

Accept Qty

Reject Qty

Reject Insp. Momber Stamp

Packaging

QC4-100% Inspect kits for completeness

260

Memo

Memo

0.00

0.00

Quality Control

270

Packaging Packaging

Packaging

Identify and pack for shipping as per PPP D206-667-103

Location: PPP Rev:

Dart Ae	rospace	Ltd						
W/O:			WO	RK ORDER CHANGES	3			
DATE	STEP	PRO	OCEDURE CHAP	IGE	Ву	Date Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
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Work Order ID 62743

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Item ID:

D206-667-103

Accept



Setup Start



Revision ID:

Item Name: Crosstube Fwd

Start Date: 10/7/2010 **Required Date: 10/27/2010**

Start Qty: 1.00

Req'd Qty: 1.00



Cust Item ID: Customer:

Reference:

Approvals:	
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Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Stop



Sequence ID/ Work Center ID

280

Operation Description

QC21- Final Inspection - Work Order Release

Set Up/ **Run Hours**

0.00

Tool ID

Tool # Plan Code

Accept Qty

Reject Reject

Insp. Number Stamp

Quality Control

Memo

0.00

Qty

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W/O:			WC	RK ORDER CHANG	ES				
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Picklist Print

Thursday, October 07, 2010 1:26:18 PM

Work Order ID: 62743

Parent Item:

D206-667-103

Parent Item Name: Crosstube Fwd



Start Date: 10/7/2010 Start Qty: 1.00

Required Date: 10/27/2010

Page 1

Required Qty: 1.00

Comments:

IPP Rev:F□05.09.01□Add holes for compatibility with Bell Skidtubes□KJ/JLM

IPP Rev:G 08-06-03 update as per DSI9415 (ECN1198) DD verified by:

IPP Rev: H 08.11.17 QC5 was QC6 at step 12 KJ verified by: EC

IPP Rev:I 08-12-15 add magnobond DD verified by:EC IPP Rev J 09.01.06 ECN 08-562 EC verified by: DD IPP Rev:K 09-01-19 as per DSI9439 DD verified by:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D206-667-103TRN		Manufactured	No			110	Each	2.0000	1 	1 <i>E</i> Z	10-	10-76	
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D2873-043 Nut Plate Assembly		Manufactured	No			230	Each	16.0000		2	l	m/ 10	10:11
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Nut Plate Assembly											Л	<u> </u>	11.02
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· Picklist Print Thursday, October 07, 2010 1:26:18 PM				Page 2
Work Order ID: 62743		111 JBB1 (1288) (1811 88198 1111 1881		
Parent Item: D206-667-103 Parent Item Name: Crosstube Fwd		HI 1881: 11886: 11811: 18138 1111: 1814	Start Date: 10/7/2010 Start Qty: 1.00	Required Date: 10/27/2010 Required Qty: 1.00
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D3595.663.450 B#61465	<u>Location</u>	Loc Oty	Loc Code	,
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MS20601-AD4W8 Purchas	sed No	230 Each	274.0000 14 14	m/10.11.01
	<u>Location</u> LG	<u>Loc Qty</u> 100	Loc Code	
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Parent Item Name: Crosstube Fwd		1,000,000			•		tart Date: 1 Start Qty: 1		Required Date: 10/27/2010 Required Qty: 1.00
MS21920-20 Clamp (per MIL-DTL-8783C)	Purchased	No		230	Each	85.0000	4	4	M 10-11-01
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			114687		1				<u> </u>
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Dart Aerospace Ltd W/O: **WORK ORDER CHANGES Approval** Approvai DATE **STEP PROCEDURE CHANGE** By Date Qty Chief Eng / QC inspector Prod Mar Part No: ______ PAR #: ____ Fault Category: _____ NCR: Yes No DQA: ___ Date: ____ WORK ORDER NON-CONFORMANCE (NCR) NCR:

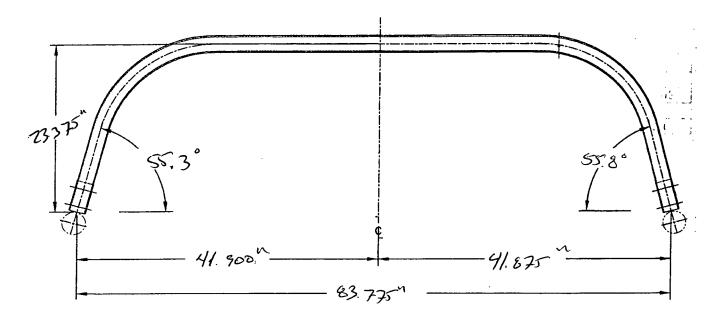
		Description of NC		Corrective Action Section B		Verification	Approval	Approval
DATE	STEP	STEP Section A	Initial Chief Eng	Action Description Chief Eng	Sign & Date	Section C	Approval Chief Eng	QC Inspector
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Thursday, October 07, 2010 1:26:18 i	$^{\circ}M$								Page 4
Work Order ID: 62743	-						·		
Parent Item: D206-667-103					1				
Parent Item Name: Crosstube Fwd							art Date: 1 tart Qty: 1		Required Date: 10/27/2010 Required Qty: 1.00
AN5-7A	Purchased	No		250	Each	131.0000	10	10	•
Bolt								11/15	936
Doil			Location	<u>Lo</u>	c Oty	Loc Code			•
			ST337		131				
ANO(AIDSI (113149		131				-
AN960JD516 NAS1149D0563J	Purchased	No		250	Each	34.0000	18	18	, / ^
Washer								1114	142 10/11/35P
			Location	<u>Lo</u>	c Qty	Loc Code			
			ST		34				
			103694		18				
			107534 109287		12 4				-
-AN970-4	Purchased	No	109287	250	4 Each	82.0000	12	12	. /
	ruiciiaseu	110		230	Lacii	02.0000			160
								101	11 BS/
			Location	<u>Lo</u>	c Qty	Loc Code			
			ST349		82				-
			115531		32			15	-
MS21042L5	D	No	115621	250	50	005 0000	4	PU	. ,
	Purchased	No		230	Each	895.0000	4 	4,17	(/
Nut									135/
			Location	<u>Lo</u>	c Qty	Loc Code			
			ST139		26				
			114813		26				-
			ST300		869			10	-
			115156		369 500			4	-
			113394		300				-

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DATE	STEP	DESCRIDION OF INC			Verifica			cation	Approval	Approval
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DART AEROSPACE LTD	Work Order:	42 13
Description: Crosstube High Fwd (206L)	Part Number:	D200-667-103
Inspection Dwg: D206-667-143 Rev: C		Page 1 of 1

Required Dimension	Min	Max		
Height	23.39	23.65		
1/2 Span	41.79	42.05		
Angle	54	56		
Total Span	83.58	84.10		



	Comments	
QC15 Inspection	18.	

Rev	Date	Change	Revised by	Approved
Α	07.02.06	New Issue	KJ/JM	
В	09.06.26	Dimensions updated per Dwg Rev C	KJ	
С	09.10.22	Minimum height dimension revised	KJ	1/

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W/O:		WORK ORDER CHANGES								
DATE	STEP	PROCEDURE CHANGE	Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector			
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Part No:	PAR #:	Fault Category:	NCR: Yes No DQA:	Date:
Resolution:		Disposition:	QA: N/C Closed:	Date:

NCR:		i	WORK ORDER NON-CONFORMANCE (NCR)										
		Description of NC		Corrective Action Section B		Verification	Approval	Approval QC Inspector					
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Item	Qty -143	Part Number	Description				
1	х	D206-667-143	CROSSTUBE ASSEMBLY (206L HIGH FWD)				
2	1	D6002-115	CROSSTUBE				
3	2	D2873-043	NUT PLATE				
4	2	D2873-045	NUT PLATE				
5	2	D2891-1	SUPPORT				
6	4	D3595-063-395	RUBBER CUSHION				
7	4	MS21920-20	CLAMP (OR MS21920-21)				
8	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)				
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120- 023 ADHESIVE (TEXTRON/BELL SPEC, 299- 947-100, TYPE II, CLASS 2 ADHESIVE)				

GENERAL NOTES:

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1) MATERIAL: MANUFACTURED FROM D6002-115 FINISHED LENGTH = 104.98±0.020

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2

PAINT OUTSIDE PER DART QSI 005 4.2

- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-143" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- WEIGHT: 15.5 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE
- RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOPCOPY RETURN OF ENGINE AJAM UNCOMPREH LAD COM SUBJECT TO A TEST YEST

WITE STICE NO 42743 PSO-10-07

REVISE GENERAL NOTES/PART LIST (ZN D7-1): 08.11.06 REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-395 WAS D2856-400-694 (ZN D6-2 & A5-2); REMOVED REF. & ADD TOLERANCE (ZN D3-3, C4-3, C5-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210: MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4. ADD HOLES AND NUT PLATES FOR COMPATABILITY 05.07.26 WITH BHT/AA SKUDTUBES A NEW ISSUE CP 00.11.17 REV. DESCRIPTION BY DATE DESIGN DART AEROSPACE LTD DRAWN RF, HAWKESBURY, ONTARIO, CANADA CHECKED DRAWING NO. REV. C MFG. APPR. D206-667-143 SHEET 1 OF 4 APPROVED TITLE SCALE CROSSTUBE ASS'Y (206L HIGH FWD) NTS DE APPR. DATE

08.11.06

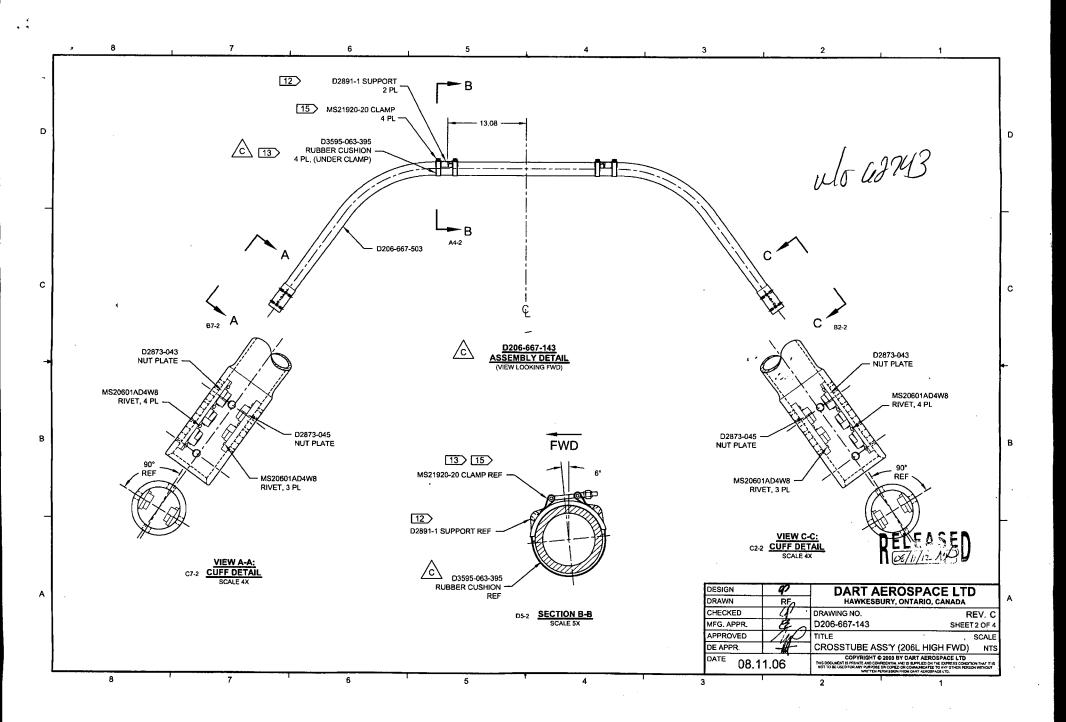
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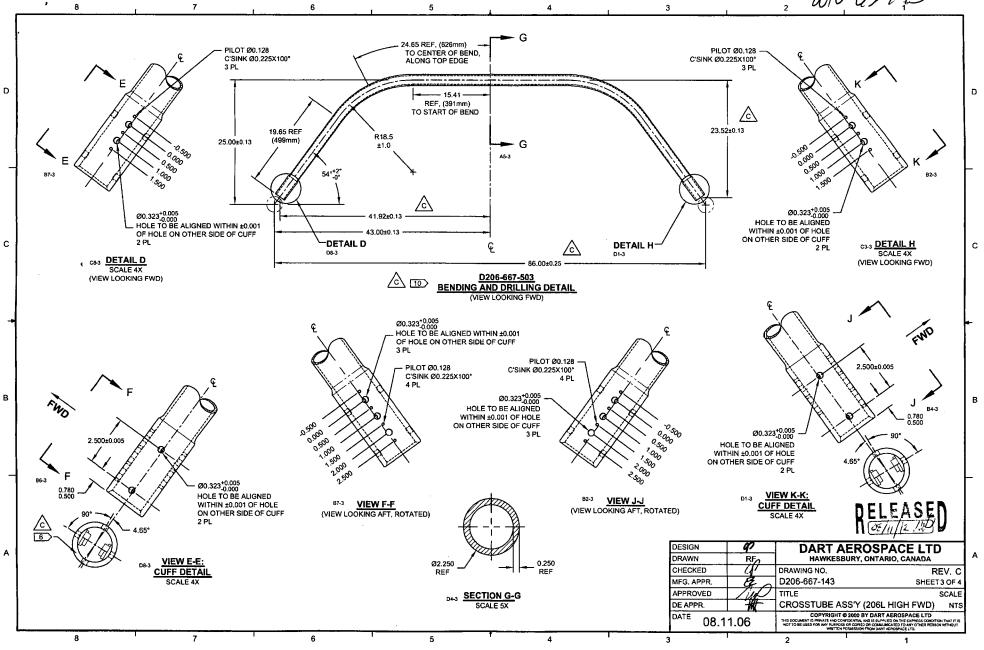
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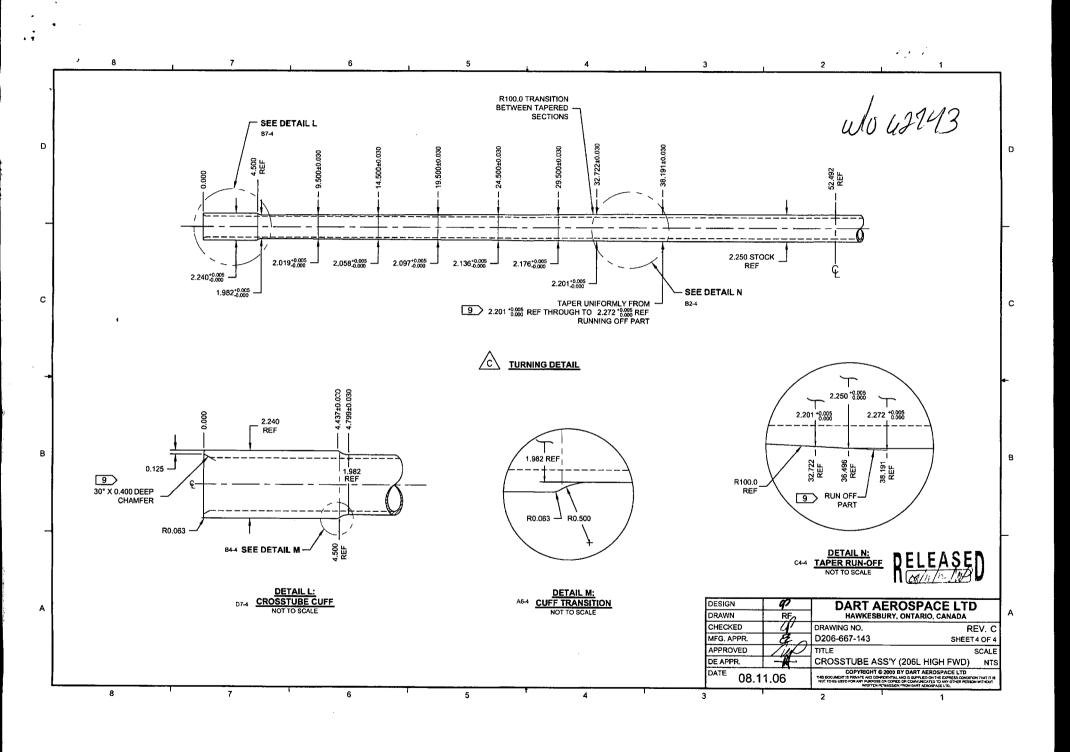
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Part No	:	PAR #:	Fault Category:	NCR: Yes No	DQA:	Date:	

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Date:

Disposition:

NCR:		WÇ	(NCR)) as the second of the second					
DATE	STEP	Description of NC Section A	Initial	Co	rrective Action Section B Action Description	Sign &	Verification Section C	Approval Chief Eng	Approval QC inspector
			Chief Eng	*	Chief Eng	Date	*		\$
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NOTE: Date & initial all entries

Resolution: __



LIQUID PENETRANT TEST REPORT

P- 15032

ACUREN		
	•	PAGE ! OF !
P	art Aerospace	DATE OCT 28 20/0 TIME AM & PM G
CLIENT	da Lacelle	ACUREN JOB NO. 188-10-0935
ATTENTION Li	70 Aberdeen St.	PO/WO No. 1/28 28 1
_П		WORK LOCATION Hawkes burg
		ACCEPTANCE STD. 1871 1414/051-038 REV./DATE 2005
PROJECT X-TUBES # D206-667-103 8 D206-667-103BL		
ITEM(S) EXAMINED 30	6#5:62310,62743,6274	4,62600,62601
JOB DESCRIPTION	PROCEDURE No. LT-CCCZ_REV./DATE	TECHNIQUE NO. LTTECH CZ REV./DATE
		1_/
		TRANT THEPECTION CARRIED OUT ON
100% EXTERNAL SURFACE OF THE X-TUBES		
TEST DETAILS		
METHOD	FLUORESCENT VISIBLE	SOLVENT REMOVABLE ☐ POST EMULSIFIED BLACK LIGHT S/N 2/78 ☐ OUTPUT > 1000 μ W/cm² ☐ AMBIENT < 2 fc
FAMILY BRAND PENETRANT Z	O GIST I'M MINIMUM DWELL TIME TO YO MIN.	LIGHTING EQUIP. FLASHLIGHT TROUBLELIGHT OUTPUT>1000 FLASHLIGHT TROUBLELIGHT OUTPUT>100 fc SURFACE
PENETRANT REMOVER	Ha D MINIMUM DRY TIME >10 MIN.	OTHER CALL OCT 15th Joic
DEVELOPER SK	D 52 MINIMUM DWELL TIME 10 MIN.	LIGHT METER S/N CAL DUE DATE April 2011
	S Non Aqueous D Aqueous D DRY	
TEST SURFACE	As Ground 🔾 As Welded	☑ MACHINED ☐ SHOT BLASTED ☑ CLEAN BARE METAL
SURFACE CONDITION SURFACE TEMPERATURE		military and the second
	☐ METRIC ☐ IMPERIAL)	
JUNETRAL OUT ON 10 ON X-TUB JUNE 6231 6274 6260 6260		W 10-10-29
Scope of Services The agreement of Activen Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Activen Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Activen Group Inc. is not assuming any responsibilities of the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Activen Group Inc. In no event shall Activen Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services. Standard of Care In performing the services provided, Activen Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Activen Group Inc.		
SIGNATURES		
CLIENT REPRESENTATIV	E Matt Murtale Ma	HI Munder DTR# E 63201
TECHNICIAN (SIGNATURE):	PRINT	SIGNATURE REPORT
NAME (PRINT):	EREDITION CHASNEN	REVIEWED BY: NAME INITIALS
- (- ·····/)	1 ⁵¹ TECHNICIAN CGSB LEVEL ### SNT LEVEL #### CGSB LE	2 ^{NO} TECHNICIAN VEL SNT LEVEL
	CGSB REG. NO /3560 CGSB RE	G. NO